Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 191 (2015) 1455 – 1459

Procedia
Social and Behavioral Sciences

WCES 2014

Knowledge Sharing For Creating School Intellectual Capital

Eric C.K. Cheng[a]*

[a]*Department of Curriculum and Instruction, The Hong Kong Institute of Education, 10 Lo Ping Road, Tai Po, Hong Kong, China*

Abstract

This study attempts to verify whether knowledge sharing would create school intellectual capital (IC). It conceptualizes school IC as human, internal and external capital which is supposed to be enhanced by knowledge sharing among teachers. A cross-sectional quantitative survey was applied to analyze knowledge sharing that would enhance the school IC, with a structural equation model applied. Results confirmed that knowledge sharing is the predictors of all three components of school IC including internal, external and human capital. This study draws the conclusion that the concept of IC could be applied in school organization and strengthened by creating effective organizational communication strategies. School leaders could cultivate communities of practice in their schools to facilitate knowledge transfer for building school IC.

Selection and peer-review under responsibility of the Organizing Committee of WCES 2014

Keywords: School Intellectual Capital; Knowledge Strategies; School Management

1. Introduction

Building intellectual capital for creating values is an important knowledge management process in all organizations (Stewart, 1997). School organizations are no exception (Kelly, 2004). Schools need to increase their values of providing quality education and accountability to the public. School education is expected to develop human capital for the knowledge society within the competitive global economy, to interact with its policy environment and know how to manage pedagogical knowledge. It is also a great challenge to continuously attract quality students and maintain the school brand name in the eyes of their stakeholders. Following the impacts and challenges of curriculum reform and the rapid emergence of knowledge resulting from curriculum reform, school leaders are expected to strengthen the professional competency of teachers and staff, formulate school policy to

* Eric C.K. Cheng. Tel.: (852) 2948 8478; fax: (852) 2948 7563.
E-mail address: eckcheng@ied.edu.hk

Selection and peer-review under responsibility of the Organizing Committee of WCES 2014
doi:10.1016/j.sbspro.2015.04.307

tackle curriculum reform, and build collaborative relationships with external parties to develop more supporting resources. These supporting resources could be conceptualized into school intellectual capital (Basile, 2009). Knowing how to build the intellectual capital of a school organization for creating values is, therefore, vital to the survival of the school in the context of education reform. Knowledge sharing is the process by which knowledge travels from a knowledge holder to a knowledge recipient through one or multiple sharing channels (Cowan, Soete, & Tchervonnaya, 2001), thereby, professional competency of the staff will be strengthened and the organization's structure and policies improved. Embedding a mechanism for promoting knowledge sharing may help a school build up intellectual capital by transforming the knowledge resources into intangible values. Few studies have attempted to identify effective knowledge sharing mechanism to build their intellectual capital. This study attempted to verify knowledge sharing processes that will enhance school IC in Hong Kong.

2. Literature Review

Intellectual capital is individual or collective knowledge in an organization that can be used to gain competitive advantage and to enhance the value of other types of capital (Casey, 2010). It consists of a whole host of things beyond know-how, procedures, lessons learned and all of the other instantly recognizable repositories of knowledge. It also includes reputation, brand recognition, trust and many more qualities that are ultimately based on knowledge. Models for exploring intellectual capital and assessing its value tend to break it down into a number of component elements. A 'tripartite model' disaggregates the intangible resources into three groups: human capital, internal capital and external capital (Kelly, 2004; Sveiby, 2001; Guthrie & Petty, 2000). Human capital relates to the competence of employees and denotes the tacit knowledge embedded in their minds, including their knowledge, skills, experiences and abilities (Roslender & Fincham, 2001). Human capital is invariably a school IC component and is recognized as the central component of intellectual capital. The human capital of schools is mainly conceptualized as the teaching competency of teachers. Internal capital refers to the non-human storehouses of knowledge in an organization that involve organizational structures and routines. It also embraces organizational culture and management philosophy, which provide a framework to guide and interpret actions in the organization. The main purpose of internal capital is to support the conversion of human capital into intellectual capital. It has been described as the infrastructure "that encourages the human resource to create and leverage its knowledge" (Edvinsson & Sullivan, 1996). It is the knowledge that remains within the organization at the end of the working day (Edvinsson & Malone, 1997). The internal capital of a school consists of the intangible assets of the organization that remain when staff and students go home, such as values, culture, processes, digital data systems, policies and procedures. External capital represents the knowledge embedded in the relationships with the outside environment (Chang, Chen, & Lai, 2008). It also includes the reputation of the school and its brand. External capital especially from external stakeholders can be a powerful weapon in a school's struggle to achieve its strategic objectives. Parents have an obvious role to play. They support the school's efforts in terms of supplying pupils, helping with homework, fundraising, acting as unpaid assistants and generally providing the liaison between school and home which is viewed by school effectiveness research as a prerequisite to educational success (Levine & Lezotte, 1990; Rowe, Hill, & Holmes-Smith, 1995). Parental supports and their social economic status provide significant relational capital for school organizations. The three school IC components are interlinked, and they support and reinforce each other when an organization has a shared sense of purpose combined with an entrepreneurial spirit and management places a high value on agility and governs more by carrot than stick (Stewart, 1997). IC could be described as knowledge stocks in the three components and is probably generated through the KM processes of creation, storing, sharing and application. Since KM is concerned with simplifying and improving the processes of sharing, distributing, creating, capturing and understanding knowledge (Gottschalk, 2006), it serves as the process of creating value from an organization's intangible assets (Liebowitz & Megbolugbe, 2003) and therefore the implementation of knowledge strategies could build IC. Knowledge sharing is a social interaction process that valuable information, experience, and knowledge are conveyed to potential recipients and accepted by the individuals or groups to be absorbed (Davenport & Prusak, 1998; Cross & Cummings, 2004). Knowledge sharing is defined as the *"provision or receipt of task information, know-how, feedback and other pertinent issues"* (Hansen, Nohria, & Tierney, 1999, p. 83). From organizational perspective, knowledge sharing is defined as the process of moving useful information from one individual to another in organization (Davenport & Prusak, 1998). Knowledge sharing maintains the vitality of organization and the competitive advantage is to continue to develop new development opportunities. Knowledge sharing has gained much importance because school organization has encountered considerable uncertainty resulting from reforms and parent choice and changes. School could gain

competitive advantages through knowledge sharing (Cowan, Soete, & Tchervonnaya, 2001). Knowledge sharing enhances the sustainable ability to redefine the knowledge and skills within an organization, supports the sustainability, retains the organizational innovative ability and achieves the goal of the organization (Garud & Nayyar, 1994). It also enhances the abilities of an organization which recognizes, absorbs and applies outside information (Cohen & Levinthal, 1990). In addition, knowledge sharing helps improve the transformative capability that can increase external resource awareness. It, at the same time, enhances the capabilities of an organization to evaluate the value of new information, to digest and understanding valuable information, and to apply digested valuable and novel information outside the organization. The model of this study assumes an association between knowledge sharing and school intellectual capital. School intellectual capital was conceptualized as human capital, external capital and internal capital (see figure 1). The research questions of this study are as follows:

1. What are the empirical elements of the intellectual capital in a school organization?
2. Are there any relationships between knowledge sharing and each element of school intellectual capital?

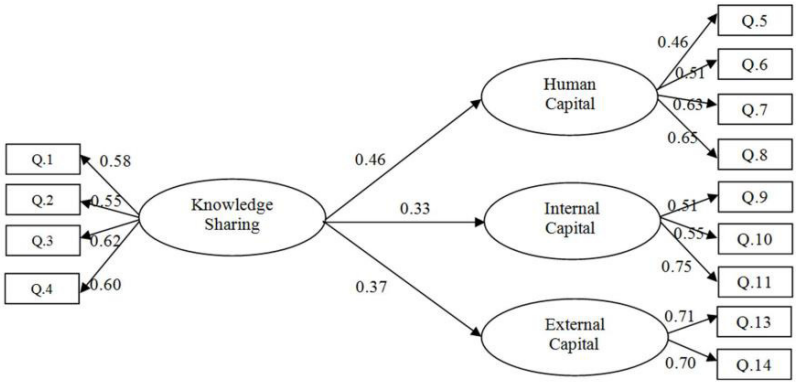

Fig. 1. Structural Model.

Table 1. Goodness of Fit Statistics of the Structural Equation Model.

$\chi 2$	df	p-value	PGFI	RMSEA	SRMR	CFI	NNFI	IFI
66.04	58	0.21888	0.62	0.017	0.029	1.00	0.99	1.00

3. Research Methodology

A cross-sectional predictive quantitative survey was designed to collect data from secondary school teachers in Hong Kong. The data was collected directly from target subjects through the questionnaire. A Structural Equation Model (SEM) was applied to examine the factor structures and the paths among the variables, using Lisrel 8.3 (Joreskog & Sorbom, 1999). The SEM is a collection of statistical techniques that allows the examination of a set of relationships between exogenous variables and endogenous variables. The questionnaire consisted of 16 items, 4 items for measuring knowledge sharing and 12 items for measuring the intellectual capital, including the human capital, internal capital and external capital. The items for measuring knowledge sharing were adopted from Cheng (2012). The researcher conducted a content analysis of the research and theory in the IC literature (Kelly 2004; Basile, 2009) to develop the items for measuring school IC. All items in section 1 and 2 were measured using a 6-point Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). Teachers were asked to indicate how they perceive their learning behaviour in regard to the 16 items. The sample was drawn from 458 teachers of four secondary schools, four primary schools and one special school, which were selected randomly. All the teachers of the sampled schools were invited to participate in the questionnaire survey, and 458 responded to the questionnaire. The data were collected directly from the target subjects through the questionnaires.

4. Findings

Structural equation model was used to confirm the construct validity of the model. The structural and measurement coefficients from the completely standardized solution under maximum likelihood are presented in

Figure 1. The goodness-of-fit statistics are shown in Table 1. The structural equation model shows that knowledge sharing is the predictive variable for all the school IC: human capital ($\gamma = 0.46$), internal capital ($\gamma = 0.33$) and external capital ($\gamma = 0.37$). All the paths in the model were significant at the 0.05 level according to the Z statistics. The hypothesized model is a good fit to the data. The results of the LISREL based on 458 participants showed that the chi-square value was not significant for the overall model, $\chi 2$ (N = 458) = 66.04, P = 0.21888. In the present study, the indexes are: PGFI = 0.62, CFI = 1.00, NNFI = 0.99 and IFI = 1.00, suggesting a reasonable fit between the data and the hypothesized model. A value of 0.08 or less for the SRMS and a value of 0.06 or less for the RMSEA indicate an adequate fit (Hu & Bentler, 1999). In this study, the SRMR = 0.029, whereas the RMSEA = 0.0017 (90% CI. 0.0; 0.035). Given that this is a very stringent model, these fit indexes show that the model fits the data fairly well.

5. Discussion

To answer the first research question: what are the empirical elements of intellectual capital in schools, the structural equation model (see Figure 1) explores the participants' perceptions of school intellectual capital. The model clearly shows that the concepts of knowledge sharing and school intellectual capital are empirically constructed into latent variables. The variables of knowledge sharing and the three elements of school intellectual capital co-exist in the model and are all experienced by the teachers. The results show that school intellectual capital comprises of human, internal and external capital that resides in teachers, school policy and relationships with parents. These findings support the fact that school IC refers to both human and the non-human storehouses of knowledge in a school that involve organizational routines such as policies and procedures (Edvinsson & Sullivan, 1996). For the second question, namely, are there any predictive effects of knowledge sharing on each element of school intellectual capital in schools. The results show that knowledge sharing is a significant predictive factor of all three IC components. Teachers consider that knowledge sharing plays a critical role in enhancing the intellectual capital of their school. They consider that knowledge sharing has an impact in terms of enhancing human capital, internal capital and external capital by transforming knowledge into value. This claim is supported by the results of the SEM (see Figure 1). It is not surprising that knowledge sharing is a predictor for human capital. These findings are similar to Poyhonen and Smedlund's (2004) study and Bruner's (1996) study, which argue that knowledge can be co-constructed through discussion and collaboration and the knowledge sharing process could facilitate teachers' learning and build human capital. Knowledge sharing involves the process of knowledge flowing from one party to another and the process of transmitting organizational knowledge to everyone who needs it (Helmi, 2002). The sharing process empowers teachers to act and communicate effectively by equipping them with required knowledge (Addleson, 2006). Knowledge sharing is a predictor of internal capital. This finding is similar to Garud and Nayyar's (1994) study which emphasized that knowledge sharing enhances the sustainable ability to redefine the knowledge and skills within an organization, support sustainability, retain an organization's innovative ability, and achieve the goal of the school. Knowledge sharing promotes a mutual understanding among teachers of school policies and practices, as well as the power and accountability in hierarchy, and therefore creates values for internal capital. Knowledge sharing is a predictor of external capital. Knowledge sharing helps teachers understand parents and support the delivery of ideas to support student learning. It enhances the abilities of an organization which recognizes, absorbs and applies outside information (Cohen & Levinthal, 1990). It enhances the transformative capability that can increase external resource awareness. Therefore, it creates external capital.

6. Conclusion

Knowledge sharing is identified in this study to be the predictive factor that can enhance school IC. An empirical model for articulating the predictive relationship between knowledge sharing and school IC is constructed in this study. This paper makes a theoretical contribution to existing literature by providing an empirical model for the implementation of knowledge sharing for enhancing school IC. As knowledge sharing enhances the school IC, schools may consider cultivating communities of practice (CoP) as a platform to facilitate knowledge sharing within the school. Wenger (2004) proposed cultivating CoPs as the core knowledge strategy of an organization. Wenger's framework of CoPs stressed the importance of collaborative learning among teachers and the contribution of knowledge sharing for enhancing learning. Actually, CoPs was applied as a knowledge management strategy for managing IC (Lesser & Everest, 2001). Besides, school organizational structures should strive to incorporate reward systems as a way to encourage staff to share their knowledge. In addition, school leaders may consider cultivating

CoPs within their school in order to build school IC. The framework provided in this study can help enhance school knowledge resources as a means to tackle the challenges raised by curriculum reform and of sustainable school development for the knowledge society.

References

Addleson, M. (2006). Learning organizations: the emergence of a relational-interpretive view of organization. In D. M. Hosking & S. McNamee (Eds.), *The social construction of organization* (pp. 196–207). Malmo, Sweden: Liber.

Basile, C. G. (2009). *Intellectual capital: the intangible assets of professional development schools*. Albany, New York: State University of New York Press.

Bruner, J. (1996). *The culture of education*. Cambridge, MA: Harvard University Press.

Casey, N. H. (2010). Integrated higher learning – an investment in intellectual capital for livestock production. *Livestock Science, 130*(1-3), 83–94.

Chang, S., Chen, S., & Lai, J. (2008). The effect of alliance experience and intellectual capital on the value creation of international strategic alliances. *Omega, 36*(2), 298–316.

Cheng, E. C. K. (2012). Knowledge strategies for enhancing school learning capacity. *International Journal of Education Management, 26*(6), 577–592.

Cohen W., & Levinthal, D. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly 35*(1), 128–152.

Cowan, R., Soete, L., & Tchervonnaya, O. (2001). *Knowledge transfer and the services sector in the context of the new economy*. MERIT-INFONOMIC Research Memorandum 2001-021, Maastricht University, Maastricht, 9.

Cross, R., & Cummings, J. N. (2004). Tie and network correlates of individual performance in knowledge intensive work. *Academy of Management Journal, 47*(6), 928–937.

Davenport, T. H., & Prusak, L. (1998). *Working knowledge: how organizations manage what they know*. Boston, MA: Harvard Business School Press.

Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital: realising your company's true value by finding its hidden brainpower*. New York: Harper Business.

Edvinsson, L., & Sullivan, P. (1996). Developing a model for managing intellectual capital. *European Management Journal, 14*(4), 356–364.

Garud, R., & Nayyar, P. R. (1994). Transformative capacity: continual structuring by intertemporal technology transfer. *Strategic Management Journal, 15*(5), 365–385.

Gottschalk, P. (2006). Stages of knowledge management systems in police investigations. *Knowledge-Based Systems, 19*(6), 381–387.

Guthrie, J., & Petty, R. (2000). Intellectual capital: Australian annual reporting practices. *Journal of Intellectual Capital, 1*(3), 241–251.

Hansen, M., Nohria, N., & Tierney, T. (1999). What's your strategy for managing knowledge?. *Harvard Business Review, 77*(2), 106–116.

Helmi, A. (2002). Knowledge management via IT and business strategies alignment: B2B MSC companies in Kuala Lampur, Malaysia. Journal of Knowledge Management Practice, October 2002. Retrieved August 22, 2011, from www.tlainc.com/articl44.htm

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternative. *Structure Equation Modelling, 6*(1), 1–55.

Jöreskog, K. G., & Sörbom, D. (1999). *LISREL 8.3: User's reference guide*. Chicago: Scientific Software.

Kelly, A. (2004). The intellectual capital of schools: analysing government policy statements on school improvement in light of a new theorization. *Journal of Education Policy, 19*(5), 609–629.

Lesser, E., & Everest, K. (2001). Using communities of practice to manage intellectual capital. *Ivey Business Journal, 65*(4), 37–41.

Levine, D. U., & Lezotte, L. W. (1990). Unusually effective schools: A review and analysis of research and practice. Madison, WI: The National Center for Effective Schools Research and Development. Retrieved August 22, 2011, from http://www.sedl.org/cgi-bin/mysql/picbib-output.cgi?searchuniqueid=84

Liebowitz, J., & Megbolugbe, I. (2003). A set of frameworks to aid the project manager in conceptualising and implementing knowledge management initiatives. *International Journal of Project Management, 21*(3), 189–198.

Poyhonen, A., & Smedlund, A. (2004). Assessing intellectual capital creation in regional clusters. *Journal of Intellectual Capital, 5*(3), 351–365.

Roslender, R., & Fincham, R. (2001). Thinking critically about intellectual capital accounting. *Accounting, Auditing and Accountability Journal, 14*(4), 383–399.

Rowe, K. J., Hill, P. W., & Holmes-Smith, P. (1995). Methodological issues in educational performance and school effectiveness research: a discussion with worked examples. *Australian Journal of Education, 39*(3), 217–248.

Stewart, T. A. (1997). *Intellectual Capital: the new wealth of the organization*. London: Nicholas Brealey Publishing Limited.

Sveiby, K. E. (2001). A knowledge-based theory of the form to guide in strategy formulation. *Journal of Intellectual Capital, 2*(4), 344–358.

Wenger, E. (2004). Knowledge management as a doughnut: shaping your knowledge strategy through communities of practice. *Ivey Business Journal, 68*(3), 1–8.